

ABSTRACT OF THE DISCLOSURE

Embodiments of the invention use silicon on porous silicon wafers to produce a reduced-thickness IC device wafers. After device manufacturing, a temporary support is bonded to the device layer. The uppermost silicon layer is then separated from the silicon substrate by splitting the porous silicon layer. The porous silicon layer and temporary support are then removed and packaging is completed. Embodiments of the invention provide reliable, low cost methods and apparatuses for producing reduced-thickness IC device wafers to substantially increase thermal conductivity between the device layer of an IC device and a heat sink. In alternative embodiments, the layered silicon substrate includes an insulator layer on a layer of porous silicon and a silicon layer on the insulator layer.